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| 10/596,707 | 06/22/2006 | David Astely | P18745-US1 | 9781 |
| 27045 | 7590 | 01/21/2009 | EXAMINER | |
| ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024 | | | NGUYEN, HAI V | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/596,707 | Applicant(s) ASTELY, DAVID | |
| | Examiner HAI V. NGUYEN | Art Unit 2618 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the communication received on 06 November 2008.
2. Claims 1-25 are presented for examination.

Response to Arguments

3. Applicant's arguments filed on 06 November 2008 have been fully considered but they are not persuasive.

4. In the remarks, Applicant argued in substance that:

Point (A), the prior art does not disclose Frequency Division Duplexing (FDD) in preamble of the independent claims 1, 24 (Applicant's remarks, page 7).

As to point (A), In response to applicant's arguments, the recitation "FDD" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

As matter of facts, Walton also discloses FDD element in Figs 3B, 3C, in paragraph [0083], [0084].

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Point (B), the prior art does not disclose that, *"the access point does not control which set of weights a terminal will use and report the quality for"* in independent claim 24 (Applicant's remarks, page 8).

As to point (B), Walton discloses in figures 7-9 that, "the access point controls which set of weights (*rate, transmit power, timing*) (*The access point schedules downlink and uplink transmissions on the FCH and RCH and further controls the rates for all active user terminals. Moreover, the access point adjusts the transmit power of certain active user terminals on the uplink. Various control loops may be maintained to adjust the rate, transmit power, and timing for each active user terminal, [0659]*) a terminal will use and report the quality for (*The rate control is performed by the access point based on feedback provided by each active user terminal, [0665]; Each user terminal can send back to the access point the maximum rate supported by each wideband eigenmode, and Alternatively, the user terminal may send back sufficient information (e.g., the received SNRs) to allow the access point to determine the maximum rate supported by the downlink [0069]*)".

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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6. Claims 1-25 are rejected under 35 U.S.C. 102(e) as being anticipated by **Walton et al. US 2004/0082356 A1**.

7. As to claim 1, Walton discloses substantially the invention as claimed, including a method in an access point (Fig. 7, element 11x) of a communication system that utilizes frequency division duplexing (FDD) ([0083], [0084]), said access point transmitting signals of data streams using a set of one or more antennas to a plurality of mobile terminals, said method comprising:

determining a set of spatial transport formats (*Fig. 9B, a set of selective wideband eigenmodes/channels*) comprising for each format (*each eigenmodes/channel*) at least one vector (*a transmit vector $x(k)$*) of complex transmission weights and delays (*transmission rates, power and timing control, Figs. 14-16, [0684]*), wherein each vector (*Fig. 9B, element of steering vector $v(k)$ or eigenvector $v(k)$*) is associated with the transmission of one of a determined signal of interest (*the associated eigenmode m*) or one of a number of multiplexed co-channel signals (*other multiplexing channels*), and each vector (*a transmission power $P(k)$, [0224]-[0345]*) is associated with a transmission power value of its associated signal (*a associated subband*), and wherein each vector element is associated with one antenna (*Fig. 7, elements of "for antenna 1, 2, 3, 4"*),

selecting a subset of said transport formats as the active set for data transmission to at least one of said mobile terminals ([0659], [0665], [0669], [0670], [0672]-[0673], [0679], [0684]-[0686]) and

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signaling the active set of transport formats to the at least one mobile terminal, wherein transport format includes at least one vector of complex transmission weights and delays ([0659], [0665], [0669], [0670], [0672]-[0673], [0679], [0684]-[0686]).

8. As to claim 2, Walton discloses, wherein the norm (*the magnitude*, [0510]) of a vector represents the transmission power of the associated signal.

9. As to claim 3, Walton discloses, wherein a scaling factor of a vector represents the transmission power of the associated signal (*Fig. 9B*, [0316]).

10. As to claim 4, Walton discloses, wherein the signaling is performed over a common control channel (*Figs. 14, 16, FCCH, table 3, page 5, [0100]*) that is decodable by all users within the coverage area of the access point.

11. As to claim 5, Walton discloses, wherein the signaling is performed over a dedicated control channel (*Figs. 14, 16, FCH, RCH in table 3, page 5, [0101]*) which is transmitted over a part of the coverage area of the access point to a specific user.

12. As to claim 6, Walton discloses, wherein the mobile terminals or groups of mobile terminals are assigned to different sets of transport formats (*Fig. 1*).

13. As to claim 7, Walton discloses, advising the mobile terminals about a metric to be applied on selected downlink channel properties to derive a quality indicator for one or more of the transport formats.

14. As to claim 8, Walton discloses advising the mobile terminals to provide quality indicators for the best or a set of best transport formats with respect to the applied metric ([0549], [0665]-[0670]).

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15. As to claim 9, Walton discloses advising the mobile terminals to provide quality indicators for the worst or a set of worst transport formats with respect to the applied metric ([0549]).
16. As to claim 10, Walton discloses, wherein the applied metric is a signal-to-noise and interference ratio ([0681]).
17. As to claim 11, Walton discloses, wherein the applied metric is an estimate of the supported bit rate in terms of a channel encoding and modulation scheme (*Fig. 9B*, [0314]-[0320]).
18. As to claim 12, Walton discloses, wherein the number of weights for each antenna is the same ([0549]).
19. As to claim 13, Walton discloses, wherein only one complex weight and delay is assigned to each specific antenna ([0659]-[0670]).
20. As to claim 14, Walton discloses, wherein one fixed delay value (*the minimum delay*, [0676]) is assigned to all the antennas.
21. As to claim 15, Walton discloses, wherein the fixed delay value is not included in the-signaling of the active set of transport formats.
22. As to claim 16, Walton discloses, adjusting transport formats of the active set by adapting the parameters of their complex transmission weights and/or their transmission power by evaluating collected channel management information ([0659]-[0670]), and signaling an indication (*a steered reference*) of the adjusted transport formats to the at least one mobile terminal ([0659]-[0670]).

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23. As to claim 17, Walton discloses, wherein the collected channel management information includes mobile terminal determined quality indicators of the downlink channels associated with the transport formats ([0659]-[0670]).

24. As to claim 18, Walton discloses wherein the collected channel management information includes interference management requirements and/or indications of downlink channel statistics ([0659]-[0670]).

25. As to claim 19, Walton discloses, wherein the selecting and adjusting of said transport formats optimizes the aggregate data throughput subject to quality and fairness requirements ([0659]-[0667]).

26. As to claim 20, Walton discloses evaluating a plurality of quality indicators received from various mobile terminals and determining the applicable data rates for each of the data streams associated with the transport formats in the active set, determining from said evaluation, a scheduling scheme for scheduling data streams to said mobile terminals ([0659]), and assigning an applicable data rate to each of said scheduled data streams ([0659]-[0666]).

27. As to claim 21, Walton discloses, wherein said scheduling scheme provides a fair access to the data streams ([0657]).

28. As to claim 22, Walton discloses, wherein the said scheduling scheme provides cyclic access to the data streams ([0219], [0393]).

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29. As to claim 23, Walton discloses, wherein the scheduling scheme only provides access to the data streams if the reported quality indicator is sufficiently good ([0219], [0669]-[0675]).

30. As to claim 24, Walton discloses a method in a mobile terminal (*Fig. 7, the element of UT 120x or 120Y*) of a communication system that utilizes Frequency Division Duplexing (FDD) ([0083], [0084]), said mobile terminal having at least one antenna (*Fig. 7, the element of antenna 752*) for receiving data streams from a multi-antenna access point (*Fig. 7, the element of AP 110x*), said method comprising:

receiving from the access point, an indication (*a steered reference, [0675]-[0676]*) of applicable spatial transport formats (*rates, channel assignment information, [0676]*), each spatial transport format including at least one vector (*a transmit vector $x(k)$*) of complex transmission weights and delays ([0659], [0665], [0669], [0670]).

estimating quality indicators for the received transport formats taking the received weight and channel and interference conditions into account ([0659], [0665], [0669]-[0670]), and

transmitting a quality report for one or several of the received transport formats, including a quality indicator for each of said formats ([0669]-[0670]).

31. As to claim 25, Walton discloses, wherein a mobile terminal determines a quality indicator from a signal-to-noise and interference ratio when applying the received transport formats ([0669]-[0670]).

32. Further references of interest are cited on Form PTO-892, which is an attachment to this action.

Conclusion

33. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAI V. NGUYEN whose telephone number is (571)272-3901. The examiner can normally be reached on 6:00-3:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai V. Nguyen/
Examiner, Art Unit 2618

/Duc Nguyen/
Supervisory Patent Examiner, Art Unit 2618